SOUTH CAROLINA INFRASTRUCTURE STUDY
— REPORT 4 (REVISED) —

SUMMARY OF FINDINGS OF THE INFRASTRUCTURE STUDY AND THE IMPLEMENTATION ACTIVITIES OF OTHER STATES: THE FORMULATION OF AN INFRASTRUCTURE BUSINESS PLAN

STATE OF SOUTH CAROLINA
STATE BUDGET AND CONTROL BOARD
ADVISORY COMMISSION ON INTERGOVERNMENTAL RELATIONS

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10 MARCH 1997

DRAFT: NOT FOR QUOTATION OR ATTRIBUTION

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CONTENTS

INTRODUCTION AND OVERVIEW: IS THIS THE SAME OLD INFRASTRUCTURE SONG?

- It is a similar song, but the refrain has never been more critical.
- The time is quickly passing for the song to have any meaning.

INTRODUCTION

Discussion: Components of the Summary Report

This is the fifth and summary report on statewide infrastructure needs produced for the South Carolina Commission on Intergovernmental Relations. The study took place between June 1996 and February 1997. Findings of the analyses are presented in this and four other reports dealing with:

(1) Gross Infrastructure Needs and Costs—1995–2015
(2A) Reducing Infrastructure Costs through Alternative Means of Provision, Technology Improvements, and Regionalization
(2B) Reducing Infrastructure Costs through Costs of Sprawl Reductions
(3) Revenue and Finance Alternatives and Projections

The summary that follows attempts to highlight materials from each of the component reports. It serves as a "quick" study of more than 400 pages of detailed cost and revenue projections. Lists of activities of other states in education and implementation of programs are also included in this summary.

Why was this study undertaken, and why is it so important at this particular time? Information is presented on the growth of South Carolina both within a national context and for subregions of the state. What is clear from this presentation is that most subjurisdictions of the state of South Carolina are growing, making it one of the fastest-growing states in the nation. Both the South as a region of the United States and South Carolina as a component of the South are experiencing major population and employment growth. A time of economic boom is at hand for both. Whereas this boom took place in other southern states in the 1970s and 1980s, South Carolina had not experienced it until now. The next 10 to 20 years will be a period of change for South Carolina. The state must be prepared to support growth by building an array of necessary infrastructure.

This is precisely the information presented on the pages that follow. It is a blueprint for how South Carolina can respond to the growth that is already on its doorstep. The blueprint for infrastructure response calls for:

1. A comprehensive program of education of elected officials, business leaders and the general public;

2. An assessment and inventory of resources including state and local monies now being spent for infrastructure, to enable South Carolina to do more with existing resources;

3. A systemic reform and restructuring that would:
   a. establish a central authority or coordinating body;
   b. establish a planning and infrastructure prioritizing process;
   c. recommend specific ways to eliminate duplication and fragmentation among existing state and local agencies responsible for infrastructure projects;
   d. recommend changes in legislation and regulation that will make South Carolina's infrastructure more efficient;
   e. propose funding alternatives.

GROWTH IN SOUTH CAROLINA

Statewide—1995-2015

- Population growth: + 840,000, or 23%
- Employment growth: + 480,000, or 30%

South Carolina is:

- 10th fastest-growing state in nation
- 5th fastest-growing state in the South (tied with Tennessee)

Behind:

(2) Texas
(3) Florida } South
(5) Georgia
(6) Virginia

(1) California
(4) Washington
(7) Arizona } Nation
(8) Oregon
(9) Colorado

STATE AND REGIONAL GROWTH

Findings:
The Future Growth of South Carolina

South Carolina is a state whose 1995 3.7 million population and 1.6 million job base has increased by one-third and one-half, respectively, since 1970. In the next twenty years, by the year 2015, South Carolina will increase its population by about 23%, or over 840,000, and will increase its job base by 30%, or 480,000. (See Figure 2.) It is a state that attracted $5.4 billion in non-residential development investments in 1995, exceeding the previous yearly record by 45 percent. The jobs emerging from this growth—nearly 24,000—paid an average wage of $28,500, $6,000 higher than the state average, and $2,000 higher than the national average.

Findings:
Regional Growth—The "Known Five"

The vast majority of the growth is occurring in five of the state's ten regions. (See Figures 1 [map] and 2.) The Appalachian (Greenville-Spartanburg) Region in the northwestern portion of the state is the home of BMW's domestic production facilities. In 1995, this region had the largest share of population (26%) and employment (29%) in the state. It is within the I-85 corridor from Atlanta to Washington, D.C., and is home to most of the blue-chip plants and manufacturing facilities that have come to South Carolina. By 2015, its population will increase by 23 percent and its employment by 24 percent.

The Central Midlands Region is the home of the state's capital (Columbia) and is the center of white-collar growth in the form of private-sector professionals, government workers, and university faculty, students, and staff. This region, which is cross-cut by Interstates 20 and 26, has 15 percent of the state's population and 18 percent of its job base. Population is expected to grow in this region by 24 percent and employment by 30 percent by the year 2015.

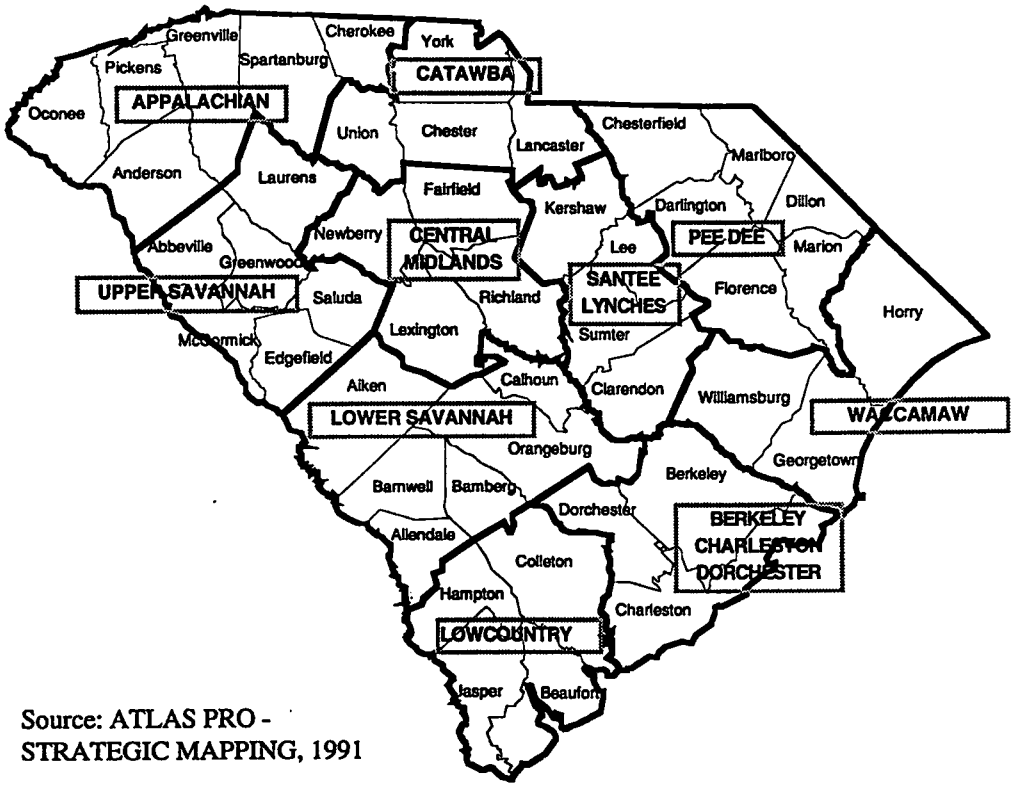
Charleston, on the eastern coast toward the middle of the state, is the home of port-oriented activities, the military, and cultural tourism. It is part of the Berkeley-Charleston-Dorchester Region, which is accessed from the north and south via Interstates 95 and 26. It has slightly less population than the (7%) Central Midlands Region and about 26 percent less employment. It will grow by 22 percent in population and 50 percent in employment over the 20-year period 1995–2015.

The Myrtle Beach area, or the Grand Strand, is part of the Waccamaw Region. It is located along U.S. Highway 17 in the northeastern part of the state. This region, known for beach-oriented tourism and golf, is one of the fastest-growing regions in the state. Over the next twenty years, growth will increase population by 41 percent and employment by 32 percent.

Hilton Head is part of the Lowcountry Region and is accessed via Interstate 95 in the extreme southern part of the state. This area, once known primarily for retirement or second-home development on Hilton Head Island, is now experiencing significant off-island population and employment growth. It is the smallest region for both aggregate population and employment, but over the next twenty years, it will be the second fastest-growing region in population and tied for first place in employment growth.

Figure 1

Counties (46) and COG Regions (10) in the State of South Carolina



Source: ATLAS PRO - STRATEGIC MAPPING, 1991

Figure 2

Population and Employment Growth in South Carolina 1995-2015

	Population				*Employment*			
COUNTY / REGION	*1995*	*2015*	*Change #*	*Change %*	*1995*	*2015*	*Change #*	*Change %*
S.C. STATE TOTAL	3,684,715	4,525,852	841,127	23%	1,609,678	2,090,258	480,570	30%
UPPER SAVANNAH	193,100	217,500	24,400	13%	74,410	85,250	10,840	15%
PEE DEE	322,700	346,100	23,400	7%	127,770	156,550	28,780	23%
CATAWBA	263,900	346,844	82,944	31%	94,530	120,750	26,220	28%
WACCAMAW	246,300	346,600	100,300	41%	111,380	146,700	35,320	32%
LOWCOUNTRY	167,500	226,000	58,500	35%	62,970	94,200	31,230	50%
LOWER CENTRAL	284,200	344,500	60,300	21%	111,440	137,900	26,460	24%
MIDLANDS	548,300	680,300	132,000	24%	284,970	369,850	84,880	30%
SANTEE LYNCHES	203,300	234,100	30,800	15%	65,280	87,100	21,820	33%
APPALACHIAN	946,100	1,163,400	217,300	23%	466,330	576,250	109,920	24%
BERKELEY-CHARLESTON-DORCHESTER	508,317	619,500	111,183	22%	209,600	314,700	105,100	50%

Findings:
Regional Growth—The "Comers"

The above five regions represent 66 and 71 percent of the state's population and employment, respectively; they represent about 74 and 76 percent of projected growth in these two sectors (see Figure 2). Thus, although these areas have been and will continue to be the areas that are immediately identifiable with South Carolina's future growth, growth will take place in other regions of the state as well.

Of the earlier-mentioned "Known Five" regions, the Lowcountry has the smallest projected population growth—an increase of only 60,000 over the twenty-year period.

Of the remaining regions, the Upper Savannah, surrounding the Sumter National Forest, is and will continue to be a significant tourist destination. It has been discovered by such national and international firms as Sara Lee (baked goods) and Fuji (film production). However, although it is embraced by Interstates 20, 26, 385 and State Road 72, the Upper Savannah Region lacks an interstate in and around Greenwood. Even though its population is currently about 15 percent greater than the Lowcountry Region's, over the next twenty years, the Upper Savannah Region's population and employment will grow by only 35 to 40 percent that of the Lowcountry Region.

The Catawba Region in the north-central part of the state is bisected in a north-south direction by Interstate 77, which runs from Columbia, SC to Charlotte, NC. It is largely influenced by the growth of Charlotte, particularly as this city affects suburban York County. The Catawba Region's population will grow by about 83,000 or 31 percent over the period 1995-2015. Its job base is expected to increase by about 26,000—roughly half the rate of the Lowcountry and nearly twice the rate of the Upper Savannah Region.

The Lower Savannah Region, surrounded by Interstates 20 and 26 in the north and the US Route 301–I-95 corridor in the south, will grow by 60,000 in population (21%) and 26,000 in jobs (24%). Eighty percent of the growth in population and 48 percent of the growth in jobs will take place in Aiken County, which is influenced heavily by events in Augusta, Georgia. The remaining counties of the region are rural–agricultural in nature and will grow slowly in absolute terms over the period.

The changing military priorities of the U.S. government will continue to heavily influence the economy of the Santee Lynches Region, the region immediately east of the one containing the state capital. Population will grow by 31,000 or about 15 percent, and employment by 22,000 or about one-third. The region is traversed by Interstate 20 in an east-west direction in its northern half and by I-95 in a north-south direction in its lower half. Fifty-six percent of the region's population growth and 47 percent of the employment growth will take place in Sumter County.

The Pee Dee Region, northwest of Myrtle Beach and on the border of North Carolina, has the slowest projected population growth in the state. But the region's population will still grow by about 23,000 and its job base by about 29,000 over the next twenty years. The region is divided by Interstate 95 in a north-south direction; however, it lacks an equivalent east-west thoroughfare. State Road 501 is underdeveloped in this region.

What Other States Have Done: Future Growth Policy

The state of South Carolina will continue to be a magnet for residential, commercial, and industrial development in the foreseeable future. Analyzing and choosing between measures that other states have undertaken will help ensure that this future growth occurs in a manner that maximizes use of the state's infrastructure and minimizes disruptions to its environment and natural resources. To react to growth, other states have adopted the following types of actions:

- Development is directed both to existing growth areas (but in more compact form) and to areas that are not growing, in the form of newly designated centers. Both of these types of locations maximize the use of existing and future infrastructure.
- Growth is viewed in the context of an overall infrastructure plan to meet both economic and social needs.
- The concept of "minimal thresholds" is used for those locations that are being bypassed by growth.
- The concept of "locational limits" is used for those locations that border sensitive natural habitats.
- The concept of a "carrying capacity" is used for those areas that are nearing the saturation point for new growth.
- Links between those regions that are joined by functional parallelism and complementarity are established.
- The special needs of industries that require specific natural resources are emphasized.
- The responsibility for infrastructure planning activities for the state is often undertaken by a newly created office in the state treasury department or budget office.

In short, the idea of "Strategic Economic Development" is a guiding concept in directing future economic growth in other states. This entails both the targeting of critical capital spending to expand existing growth nodes and selected capital spending to attract new enterprises to areas in which they currently do not exist. This two-prong approach is one that neither accepts limits to current growth nor allows this growth to cause regional disparity or dysfunction. The above strategy is accomplished by the aggressive management of public resources to avoid ill-timed or inappropriately located capital facilities.

INFRASTRUCTURE NEED

- Growth requires economic development.
- Economic development requires infrastructure.
- Infrastructure planning begins with need projections.
- South Carolina's need is great—$56.7 billion, one-half of which is for transportation infrastructure.
- Infrastructure need should be addressed, not ignored or deferred.

STATEWIDE AND REGIONAL INFRASTRUCTURE NEED

Discussion: The Nature and Value of Infrastructure

Infrastructure is defined as roads, bridges, mass transportation, airports, ports and waterways, water supply, waste treatment and disposal, energy supply, and communications. Infrastructure in the nation's 83,000 cities and other local jurisdictions is directly linked to the national economy. It is the foundation upon which industrial wealth is created; it is utilized by every citizen and all industries.

Economic development is the growth of residential and nonresidential structures on primarily private lands. Beneficial economic development improves both the quality of life and standard of living of a state's residents. It does this by targeting areas of critical capital spending to expand existing growth nodes and to encourage new enterprises in areas where they currently do not exist. Business decisions about where to locate in a state are heavily influenced by factors that encourage business growth. In addition to a skilled labor force, these factors include adequate public facilities and a high quality of life. The absence of water and sewer curtails the construction of businesses and housing. The increasing costs of solid waste disposal drive up industrial and commercial expenses and reduce personal disposable income. Clogged transportation arteries frustrate commuters and disrupt the delivery of goods and services. The careless use of open space and the inadequacy of recreational services make a state less attractive to businesses, residents, and tourists.

In a free-enterprise economy a state's economic health depends upon growth. Growth produces jobs, housing, and commerce. Growth is needed to generate tax revenues to maintain roads, transit systems, water and wastewater systems, and other infrastructure. The answer to growth accommodation lies neither in limiting development nor passively accepting its consequences: it resides in managing public investment in infrastructure and natural resources wisely and in strategic economic development. Without growth, bills can't be paid; conversely, with too much growth infrastructure can't be provided quickly enough.

Although seemingly obvious, it is easy to overlook the relationships between growth, required infrastructure, and quality of life. Few areas, other than those that are growing, can claim appreciating property values, access to meaningful employment, superior systems of education, low crime rates, and significant recreational and cultural amenities for residents. The above locations all score highly in surveys of resident satisfaction, and all are at the top of the list of most quality of life polls. Well-planned growth receives high marks from residents who, in turn, realize that better living environments may cost more, but the benefits far outweigh the costs.

One way to deal with growth is to try to assure that there is ample infrastructure both currently in place and projected for the future. This undertaking begins with a projection of infrastructure need for both the state and its subjurisdictions by type of infrastructure.

INFRASTRUCTURE NEED

Discussion: Components of Infrastructure

Infrastructure need in the State of South Carolina is comprised of seven major categories of capital infrastructure that group 28 different facets of growth-related capital outlays. The major categories of expenditure are:

- Transportation
- Commerce
- Public Safety, Administration and Welfare
- Education
- Health
- Recreation and Culture
- Environment

Infrastructure is divided into *regional* need (state- or COG-required) and *local* need (county- or municipality-required). It is also divided into *backlog* (deferred from completion), *rehabilitation* (system repair and improvement), and *new growth* needs (additionally required capital facilities).

Findings: Infrastructure Need Statewide by Type and Category

State infrastructure needs for South Carolina amount to about $57 billion currently and over the twenty-year period 1995 to 2015 (Figure 3). More than 58 percent of this infrastructure need is related to new growth ($30 billion); about 25 percent of that amount is related to rehabilitation needs; and approximately 17 percent is related to backlog. It is assumed that backlog will be met during the twenty-year period and that it will not reoccur over the period. System upgrading (rehabilitation) will take place continuously, including that required for new growth infrastructure as it ages over time.

By far the most significant category of statewide infrastructure need is that related to transportation. This category alone amounts to 51 percent of the infrastructure need projection, of which road expenditures constitute three-quarters.

Other significant statewide categories of infrastructure requirements are: education (18% of total); health (14%); commerce (7%); public safety, administration and welfare (5%); the environment (3%); and recreation and culture (3%).

In terms of *both* existing development and new growth, the most significant capital expenditures are roads, bridges, public education and higher education, water, sewer, and economic development. On a per capita basis (including all residents and employees), new growth infrastructure need amounts to about $5,000 per existing state resident/employee over the next twenty years, and backlog/rehabilitation costs (system maintenance) amount to $3,600 per existing resident/employee. These total to $8,600 per capita and are daunting, but very realistic, levels of infrastructure need by anyone's estimate.

Findings: Infrastructure Need by Region

Infrastructure need within the state's ten regions ranges from a high of $12 billion to a low of $2 billion. In the first case this represents, respectively, the Appalachian region; in the second, the Santee Lynches Region. The highest-spending regions contain the growth nodes of Greenville-Spartanburg and

Charleston; the lowest-spending region is comprised of slower-growth counties in a region west of the state's capital.

What Other States Have Done: Recognizing and Addressing Infrastructure Need

- They have recognized that infrastructure need is not going to go away. They have embraced and addressed it.
- They have recognized the relative requirements for infrastructure—by type—and, as well, revenue-raising ability to support the infrastructure needs of various types. Even though transportation dominates infrastructure need, significant capital expenditures take place across all types of infrastructure.
- Similarly, they have attempted to understand the locational demands of infrastructure. Most infrastructure is built in locations where it already exists. This is not to say that slowly developing areas have insignificant infrastructure needs.
- They understand and appreciate the significance of the need numbers in terms of the magnitude of the burden and where money will come from.
- Relationships between new growth and backlog/rehabilitation are understood in terms of allocating future and current resources.
- Relationships between local and regional needs are understood in terms of designating future funders of capital facilities.
- The scale of the problem is comprehended and communicated to gather consensus and support for future action. The consequences of doing nothing more than is currently being done is clearly understood.

Figure 3
SOUTH CAROLINA INFRASTRUCTURE NEEDS (1995-2015)
(in millions of current dollars)
STATE TOTAL

Service Area	*Regional*	*Local*	*Backlog*	*Rehab*	*New Growth*	*Total*
TRANSPORTATION						
Roads	13,426	8,320	3,098	5,488	13,160	21,746
Bridges	2,933	116	185	287	2,577	3,048
Public Transportation	857	330	216	428	543	1,187
Freight (Rail and Road)	245	71	68	146	102	316
Ports/Maritime Activities	1,471	215	338	674	674	1,686
Aviation (Including Air Freight)	427	380	164	239	404	808
Other Transportation Facilities	16	5	4	4	13	20
Total	**19,375**	**9,437**	**4,073**	**7,265**	**17,473**	**28,811**
COMMERCE						
Economic Development	1,699	370	229	85	1,754	2,069
Farmland Retention	52	21	53	9	10	72
Energy	309	85	23	221	150	394
Telecommunications	1,286	31	52	456	809	1,317
Total	**3,346**	**506**	**357**	**772**	**2,723**	**3,852**
PUBLIC SAFETY, ADMINISTRATION AND WELFARE						
Public Safety (Jails)	547	1,020	272	245	1,051	1,567
Justice (Courts)	146	339	94	157	234	485
Public Admin./ Instit./ Hsg.	180	401	145	137	298	581
Total	**873**	**1,760**	**511**	**539**	**1,584**	**2,634**
EDUCATION						
Public Education	697	6,346	1,893	1,943	3,207	7,043
Higher Education	2,629	546	152	487	2,536	3,175
Total	**3,326**	**6,892**	**2,045**	**2,430**	**5,743**	**10,218**
HEALTH						
Public Health Care	814	580	382	391	621	1,394
Water Supply	85	2,265	341	585	1,424	2,350
Waste Water Disposal	816	2,176	530	781	1,681	2,992
Solid Waste Management	259	788	540	352	155	1,047
Total	**1,973**	**5,810**	**1,794**	**2,109**	**3,880**	**7,783**
RECREATION AND CULTURE						
Recreational Facilities	155	456	104	172	335	611
Arts / Library	225	252	159	85	233	477
Historic Resources	243	186	98	152	178	427
Total	**623**	**893**	**361**	**408**	**746**	**1,516**
ENVIRONMENT						
Storm Water Management	230	666	141	254	501	896
Shore and River Protection	242	183	64	204	158	426
Sensitive Land and Water	123	140	49	23	191	263
Open Space	66	167	115	56	61	233
Air Pollution	32	15	8	27	12	48
Total	**693**	**1,172**	**378**	**564**	**923**	**1,865**
OVERALL TOTAL	**30,208**	**26,470**	**9,518**	**14,088**	**33,072**	**56,678**

Source: Rutgers CUPR; Wilbur Smith Associates; Siemon, Larsen & Marsh; Sandstone Environmental Associates - Projections, August 1996

REDUCTION OF INFRASTRUCTURE NEED EXPENDITURES THROUGH TECHNOLOGY, REVISIONS IN DELIVERY SYSTEMS, AND GROWTH PATTERNS

- Infrastructure need can be reduced by $14 billion, or 25 percent, through the use of new technology, by identifying alternative ways of providing infrastructure, or through regional sharing of resources. *Net remaining need:* $42.8 billion.

- Infrastructure need can be reduced by altering growth patterns. This affects only new growth-related infrastructure and amounts to $2.7 billion, or a 6.3 percent reduction. *Net remaining need*: $40.1 billion.

REDUCTIONS IN COSTS THROUGH TECHNOLOGY AND REVISIONS IN WAYS AND MEANS OF PROVISION

Discussion: How Infrastructure Cost Projections Can Be Reduced

The basis of infrastructure cost projections is that infrastructure will be provided in the future in the same way that it has been provided in the past. In reality, there are ways to provide infrastructure that are much more innovative than approaches typically used in the past. These include alternative ways of providing infrastructure, improvements in technology, and a regional approach to infrastructure provision by sharing costs and resources. These innovations affect both new infrastructure (backlog and new construction) and the rehabilitation of existing infrastructure.

In the first case, there are improvements in the construction and road-building processes that significantly reduce labor costs required for such capital construction. There are further improvements in building materials that can reduce the costs of roads, water/sewer infrastructure, and public buildings. Finally, there are ways to share infrastructure such that not as much infrastructure is consumed by the same number of participants.

The first category is represented by the use of new satellite guidance systems that can accomplish automatic grading of roads and locational positioning of water and sewer lines, utilities, and cable. The second is represented by more durable and cheaper concrete roadways that can be built by mixing portions of old concrete and new roadway materials. Similar material advances have been made for the construction of public buildings and for water/sewer piping. The third category is represented by multiple counties sharing a public justice complex. This saving of two significant public buildings enables more effective use of time and space.

Discussion: Calculating Potential Infrastructure Savings

Information on potential savings was obtained from infrastructure providers, e.g., state road departments; professional organizations, for example, the American Public Works Association (APWA); and product technology groups, for example, the American Society for Testing Materials (ASTM).

Two basic pieces of information were included:

1. the share of infrastructure that the component that could undergo savings represented, and
2. the savings that potentially could be realized.

These were multiplied to produce the reductions in cost that could take place in each category of infrastructure.

The three potential means of savings were applied serially—that is, alternative ways of infrastructure provision, then technology, and finally, sharing of resources. Savings were calculated for each of the seven groupings, including 28 categories of infrastructure as well as for rehabilitation and new construction. (Backlog

was assumed to be similar to new construction.)

Discussion: Procedural Example

The example below shows the type of information that was provided for arts and libraries.

TABLE 1A
Arts/Library Infrastructure Cost Reductions:
New Growth

TECHNOLOGICAL ADVANCES

Discussion	1. The electronic availability of reference material by way of the Internet offers substantial opportunities for cost reductions in the provision of library facilities. 2. The likelihood of substantial cost reductions in the provision of cultural arts facilities as a result of technological advances other than libraries is relatively small given the cultural arts experience.
Estimated Savings (in percent)	1. The potential savings related to technology advances is subject to issues of public policy in regard to continued provision of library facilities with books. If public policymakers opt for electronic libraries, cost reductions could be significant—as much as 50 percent. 2. None
Sources	1. American Library Association 2. Consultant knowledge, experience, and analysis

ALTERNATIVES TO TRADITIONAL CONSTRUCTION/RESOURCE SHARING

Discussion	Inclusion of community libraries or cultural arts facilities in private buildings can result in savings. For example, the construction of a facility on privately donated land can reduce overall costs by the costs of land and further through the use of shared parking.
Estimated Savings (in percent)	Up to 10 percent
Sources	Government Finance Officers Association

These estimates of savings were individually linked to a specific category of infrastructure for both new construction (including backlog) and rehabilitation. Care was exercised to avoid duplication and overstatement of savings. If there was an area of innovation applicable to several infrastructure categories, each category was credited accordingly; if multiple strategies applied to the same category, their individual effects were netted out from each other to determine a combined impact. If there was no documentable source of innovation, the infrastructure cost amount was left unchanged.

Findings: Savings Related to Technology and Ways and Means of Provision

Alternative-mode provision strategies and technological improvements produce savings that amount to approximately 25 percent overall, or about $14 billion (Figure 4). The remaining infrastructure costs that cannot be addressed by alternative ways and means of provision or by technology amount to $42.8 billion.

Nearly three-quarters of the cost reduction—or $10.3 billion—results from alternatives in construction methods/approaches. The largest savings are in the transportation category, since it represents the biggest category of spending. About $4.9 billion could be shaved off the projected $28.8 billion transportation bill. The remaining savings, related to technology, are $3.2 billion; for regional sharing, they amount to $360 million.

On the whole, however, savings are broad-based and significant. What has been demonstrated here is that if a concerted effort is made to pursue the most innovative forms of infrastructure development, about one-quarter of gross costs can be reduced. This requires a concerted effort on the part of infrastructure providers to constantly seek innovation and least-cost measures, consistent with maintaining quality, in infrastructure provision.

What Other States Have Done: Use Technology to Curb Costs

The savings described in this report have been realized elsewhere by agencies and offices of government undertaking these cost saving measures. In several states, a central office began evaluating and implementing the most significant types of savings. Working together with state departments of transportation, commerce, justice, education, health, environmental protection, and other executive agencies, the central offices found that they were able to realize the following orders of magnitude of savings related to the specific types of activities discussed below.

- *Several billions of dollars were saved through new construction management techniques.* Central offices examined how "Best Practices" construction techniques were developed in their own states' context. They implemented the comprehensive Design-Build-Operate-Maintain approach to capital construction projects.
- *Approximately the same level of savings was achieved by the creation of public-private partnerships.* States began changing public perceptions to accept the private provision of public infrastructure. They reviewed how other governments contracted out road, airport, prison, and economic development construction.
- *About the same level of savings was realized by regulatory reform.* Zoning, building codes, and other rules and regulations are meant to protect citizens', workers', and consumers' lives, health, and property. Too often, however, they have stifled productivity and escalated costs to prohibitive levels. Other states have encouraged the "partnering" of regulatory agencies and contractors to replace a less productive adversarial relationship with a more effective cooperative union. Likewise, they have allowed contractors more scheduling flexibility in their operations. These two actions have saved hundreds of million of dollars in these locations.
- *Savings similar to those achieved by regulatory reform were realized from modularization and standardization of construction.* States have found that some portions of infrastructure translate into huge cost reductions. They have directed education programs to infrastructure providers to encourage their acceptance of these techniques.
- *Again, a similar amount was saved through improved maintenance programs.* States have found that overcoming public, legislative, and bureaucratic short-sightedness is the primary challenge of a central agency when developing a plan to capture the savings from improved maintenance programs. These

states have found the political will to regularize and rationalize maintenance and have saved hundreds of millions of dollars in emergency and ad hoc repair costs.

- *Nearly the same amount of savings was realized through increased computerization and improved telecommunications.* States have encouraged software and hardware providers to talk to local builders and inspectors. At stake was more than a billion dollars in potential savings—because the right technology was disseminated to the appropriate people.
- *Similar amounts were saved through the use of new composite materials.* States have found that research in materials science provides a stream of new products that make infrastructure less costly to erect and cheaper to maintain. They have developed outreach programs to overcome the construction industry's historical conservatism in adopting new or innovative materials.

Tens of billions of dollars in infrastructure cost reductions have been harvested elsewhere. Scores of savings techniques have been outlined in this series of reports, and the largest are broken out above. Other states have used this list as a jumping-off point to begin to come to grips with the infrastructure cost-revenue gap.

Figure 4
SOUTH CAROLINA INFRASTRUCTURE SAVINGS (1995-2015) BY SOURCE
(in millions of current dollars)
STATE TOTAL

		Savings from						
		Alternatvies		Technology		Regionalization		
Service Area	*Original*	*$*	*%*	*$*	*%*	*$*	*%*	*Final*
TRANSPORTATION								
Roads	21,746	3,861	18	762	4	124	1	16,998
Bridges	3,048	411	13	222	7	2	0	2,413
Public Transportation	1,187	141	12	16	1	8	1	1,022
Freight (Rail and Road)	316	50	16	19	6	1	0	246
Ports	1,686	236	14	94	6	3	0	1,352
Aviation (Including Air Freight)	808	165	20	59	7	8	1	576
Other Transportation Facilities	20	4	19	0	1	-	-	16
Total	**28,811**	**4,867**	17	**1,173**	4	**147**	1	**22,623**
COMMERCE								
Economic Development	2,069	412	20	284	14	18	1	1,355
Farmland Retention	72	12	16	1	1	1	2	58
Energy	394	62	16	18	5	1	0	313
Telecommunications	1,317	181	14	53	4	-	-	1,084
Total	**3,852**	**666**	17	**355**	9	**20**	1	**2,810**
PUBLIC SAFETY, ADMINISTRATION AND WELFARE								
Public Safety (Jails)	1,567	472	30	92	6	-	-	1,004
Justice (Courts)	485	84	17	24	5	-	-	377
Public Admin./ Instit./ Hsg.	581	135	23	38	7	-	-	408
Total	**2,634**	**691**	26	**154**	6	**-**	-	**1,789**
EDUCATION								
Public Education	7,043	1,664	24	352	5	-	-	5,028
Higher Education	3,175	501	16	190	6	-	-	2,484
Total	**10,218**	**2,164**	21	**543**	5	**-**	-	**7,512**
HEALTH								
Public Health Care	1,394	399	29	84	6	8	1	903
Water Supply	2,350	282	12	276	12	68	3	1,724
Waste Water Disposal	2,992	362	12	360	12	48	2	2,222
Solid Waste Management	1,047	206	20	38	4	5	0	798
Total	**7,783**	**1,248**	16	**758**	10	**130**	2	**5,646**
RECREATION AND CULTURE								
Recreational Facilities	611	153	25	31	5	-	-	428
Arts / Library	477	88	18	48	10	-	-	342
Historic Resources	427	87	20	10	2	8	2	322
Total	**1,516**	**327**	22	**88**	6	**8**	1	**1,092**
ENVIRONMENT								
Storm Water Management	896	201	22	102	11	30	3	562
Shore and River Protection	426	69	16	15	3	2	0	340
Sensitive Land and Water	263	36	14	16	6	11	4	200
Open Space	233	47	20	6	3	12	5	168
Air Pollution	48	7	15	3	7	0	1	37
Total	**1,865**	**360**	19	**143**	8	**56**	3	**1,307**
OVERALL TOTAL	**56,678**	**10,324**	18	**3,214**	6	**362**	1	**42,779**

Source: Rutgers CUPR, Wilbur Smith Associates, Siemon, Larsen & Marsh, Sandstone Environmental Associates - Projections, December 1996

SAVINGS FROM ALTERNATIVE GROWTH PATTERNS

Discussion:
The Impact of Alternative Development Patterns on Infrastructure Costs

The costs of infrastructure provision are further refined by attempting to alter development patterns to achieve savings related to the costs of sprawl. This reflects differences in resource consumption and costs of uncontained versus contained development. The first scenario is termed *current*, or *sprawl*, development; the second, *compact* or *managed growth*. These costs are impacted in four different substantive areas: *infrastructure provision, housing costs, land consumption,* and *municipal cost-revenue impacts.*

Differences in cost emerge largely from the use of land. In the first case, under *sprawl development*, land is consumed as if there is unlimited supply and there is little cost in discarding or underusing old land in search of new. This approach to development often takes land in one-half acre or larger parcels to accommodate detached single-family homes and strip nonresidential centers along the outer beltways and spokes from the core of the metropolitan area. Lands are skipped over en route to rural locations as inner-suburban and urban lands are left behind. This pattern is not willful or intentional; it has evolved over time from a mindset that sees no societal consequences for consuming land in this way. New infrastructure is built to accommodate a scattered pattern of low-density land uses without questioning where, or in what sequence, these lands should be developed.

Another approach to land use, which is potentially more conservative in the use of land, infrastructure, and tax dollars, is *compact development* or managed growth. This approach selects land closer to existing development, encourages both infill and redevelopment of core lands, and attempts to refrain from internal development in areas that lack the necessary public facilities and services. When development takes place, natural habitats are buffered, uses are mixed if possible, and both residential and nonresidential uses, even if they exist alone, are clustered. This approach to land use has the potential of mitigating and reducing the impacts of development. It limits overall and fragile land consumption related to development, lowers requirements for road and water/sewer infrastructure and, if done correctly, simultaneously reduces public service costs and local housing prices.

Discussion:
Development Pattern Cost Savings by Category of Infrastructure

The infrastructure, land, housing cost, and municipal cost–revenue savings described above are typical of the findings of similar studies undertaken in Lexington, Kentucky; the Delaware Estuary; and Michigan. The results of these studies are applicable to the State of South Carolina because they have been undertaken in rural and suburbanizing locations. They show the following results for the categories of infrastructure shown above:

NATURAL AND MAN-MADE INFRASTRUCTURE SAVINGS: COMPACT GROWTH OVER CURRENT DEVELOPMENT

Area of Impact	Lexington, KY and Delaware Estuary	Michigan	South Carolina
Developable Land	20.5-24.2%	15.5%	15%
Agricultural Land	18-29%	17.4%	18%
Frail Land	20-27%	20.9%	22%
Infrastructure			
Roads (local)	14.8-19.7%	12.4%	12%
(state)	12-20%	19%	19%
Utilities			
(water/sewer)	6.7-8.2%	13.7%	13%
Housing/Business Development Costs	2.5-8.4%	6.8%	7%
Cost-Revenue Impacts (Municipal/school)	6.9%	3.5%	5%

Findings: Development Pattern Savings in South Carolina

The savings noted above, applied to the specific areas of infrastructure that they impact (development-related new growth), result in an overall infrastructure savings of approximately 6.3 percent. This amounts to $2.7 billion when applied to a total of $42.8 billion.

The remaining infrastructure need that cannot be addressed by technology or land pattern changes is about $40.1 billion (Figure 5).

These savings are applicable in direct proportion to the infrastructure demand in a region and are possible only if there is a willingness to channel growth in this location. This means containing growth in and around existing regional nodes and limiting growth's spread to undeveloped and underserviced rural areas. Capital facilities are least expensive where they serve the greatest numbers of people or where they can be developed at lower levels of intensity because fewer people use them. There is no free lunch with growth—growth costs! To the degree these costs can be reduced by altering somewhat where people and businesses locate, these changes can be pursued in order to better allocate future infrastructure provision. Infrastructure efficiency definitely has a growth management linkage.

Activities of Other States: Reacting to the Inefficiencies of Sprawl

The current manner in which development is unfolding in South Carolina is unnecessarily expensive to the taxpayer and the environment. Other states have found that excessive costs relating to the pattern and location of development can be avoided by creating infrastructure plans that:

- designate future centers of growth and channel development to both existing growth nodes and newly emerging areas. These plans would encourage infill in already developed areas, discourage development in areas that lack necessary public facilities and services, and lower requirements for road and water/sewer infrastructure construction in all areas.
- establish urban growth boundaries that cluster residential and nonresidential uses in and near areas of existing development. Non-rural centers are also designated.
- delineate areas of special environmental sensitivity. These areas receive less development and are protected against encroachment from other developed or developing areas.
- recognize that nodes of development are planned for in all areas of a state, although at different scales depending upon surrounding levels of development.
- recommend studies to be undertaken to determine the unique regional contribution of each area and to determine its maximum carrying capacity.
- recommend various growth management tools that control the tempo and sequence of development, including planned-unit development, purchase of development rights, transportation corridors, tax increment financing districts, and mixed-use/mixed-type districts.
- designate hierarchical development centers, including required levels of capital facilities for each of these classes of centers.

The study and implementation of these recommendations in other states have reduced the costs of future economic growth. Redirecting just one-half of future growth in the fashion described above could result in savings, to both current and future state residents, of close to $2.7 billion.

Figure 5
SOUTH CAROLINA COST OF SPRAWL SAVINGS (1995-2015) BY SOURCE
(in millions of current dollars)
STATE TOTAL

Service Area	*Costs after Initial Savings*	*Savings from*						*Final*
		Regional		*Local*		*Savings*		
		$	*%*	*$*	*%*	*$*	*%*	
TRANSPORTATION								
Roads	16,998	1,235	7	471	3	1,706	10	15,292
Bridges	2,413	377	16	9	0	386	16	2,027
Public Transportation	1,022	-	-	-	-	-	-	1,022
Freight (Rail and Road)	246	-	-	-	-	-	-	246
Ports	1,352	-	-	-	-	-	-	1,352
Aviation (Including Air Freight)	576	-	-	-	-	-	-	576
Other Transportation Facilities	16	2	10	0	2	2	12	14
Total	**22,623**	**1,613**	7	**481**	2	**2,094**	9	**20,529**
COMMERCE								
Economic Development	1,355	2	0	0	0	2	0	1,353
Farmland Retention	58	1	2	0	1	1	2	57
Energy	313	-	-	-	-	-	-	313
Telecommunications	1,084	-	-	-	-	-	-	1,084
Total	**2,810**	**3**	0	**1**	0	**4**	0	**2,806**
PUBLIC SAFETY, ADMINISTRATION AND WELFARE								
Public Safety (Jails)	1,004	11	1	21	2	33	3	971
Justice (Courts)	377	3	1	6	2	9	2	368
Public Admin./ Instit./ Hsg.	408	5	1	10	3	15	4	394
Total	**1,789**	**19**	1	**38**	2	**57**	3	**1,732**
EDUCATION								
Public Education	5,028	11	0	101	2	112	2	4,915
Higher Education	2,484	-	-	-	-	-	-	2,484
Total	**7,512**	**11**	0	**101**	1	**112**	1	**7,399**
HEALTH								
Public Health Care	903	-	-	-	-	-	-	903
Water Supply	1,724	5	0	134	8	139	8	1,585
Waste Water Disposal	2,222	47	2	121	5	168	8	2,054
Solid Waste Management	798	-	-	-	-	-	-	798
Total	**5,646**	**52**	1	**255**	5	**307**	5	**5,339**
RECREATION AND CULTURE								
Recreational Facilities	428	-	-	-	-	-	-	428
Arts / Library	342	-	-	-	-	-	-	342
Historic Resources	322	-	-	-	-	-	-	322
Total	**1,092**	-	-	-	-	-	-	**1,092**
ENVIRONMENT								
Storm Water Management	562	16	3	28	5	45	8	518
Shore and River Protection	340	-	-	-	-	-	-	340
Sensitive Land and Water	200	16	8	16	8	32	16	169
Open Space	168	2	1	4	3	6	4	161
Air Pollution	37	-	-	-	-	-	-	37
Total	**1,307**	**34**	3	**49**	4	**83**	6	**1,224**
OVERALL TOTAL	**42,779**	**1,733**	4	**924**	2	**2,656**	6	**40,123**

Source: Rutgers CUPR, Wilbur Smith Associates, Siemon, Larsen & Marsh, Sandstone Environmental Associates - Projections, December 1996

FUNDING SOURCES AND REVENUE NEED PROJECTIONS

- To meet approximately $40 billion in infrastructure costs over a 20-year period, approximately $2.0 billion in revenues must be raised each year.

- It has been the experience of other states that existing sources of state and local general fund revenue can provide about 27.5% or $0.55 billion of the $2.0 billion in required revenues. This requires specifically earmarking existing general fund revenues for capital purposes.

- Other states have also found that about 63 percent of the remaining $1.45 billion in revenues could come in the form of federal and state intergovernmental transfers. Federal funds flow directly to the state and through the state or directly to local governments. State funds flow directly to county, municipality, and school district governments.

- The remaining 27.5 percent has frequently come from new revenues—somewhat more from state sources, somewhat less from local (county, municipal, and school district) sources.

REVENUE ALTERNATIVES

Discussion: Raising Monies To Pay for Infrastructure

In the 1940s, 1950s, 1960s, and 1970s, a substantial amount of infrastructure was financed with federal and state grants-in-aid in the form of highway funds, sewer and water construction grants, general revenue sharing, and dedicated funding, such as community, block grant funds. For a variety of reasons, those funds have been declining for more than a decade and, increasingly, the cost of infrastructure has become a local government financing obligation. While there will continue to be federal and state funding for infrastructure, most experts agree that such funds will be far less than the amounts needed to provide new and replacement facilities necessary to meet a county's, municipality's, or school district's needs.

The infrastructure finance problem is compounded by the fact that many of the facilities financed by federal and state grants-in-aid are nearing the end of their useful lives and are in need of renovation or replacement. Thus, not only do local governments need to fund existing facilities' deficiencies and facilities' needs for new growth and development, but they must also fund replacement costs—all at the same time, and in an environment of increasing revenue constraints.

Discussion: Revenue Raising

The revenue sources available for new infrastructure at the local level are quite varied, but the diverse sources can, in principle, be placed in a few general categories. First, *general revenues* in the form of taxes and fees may be used to finance infrastructure. The most common source at the local level is the *property tax*, but other sources of general revenue might also be used. The money may be used to build infrastructure directly or to pay back bonds that are used to finance it. This mechanism can be used by a subset of taxpayers through special assessments. Second, a *charge* may be levied for a service, such as water provision, and part of the revenue from the charge may be used for infrastructure finance, again either directly or as a revenue source for bond funding. Finally, a *fee* may be levied based on the anticipated cost of providing new service to development. Typically, such fees are accumulated to provide future capacity expansion rather than used to fund bond measures.

Discussion: Financing Revenues

One of the most critical challenges facing local governments as they strive to meet new growth demands is the *financing* of required capital projects. Assuming a city/county council or school board does identify funding sources for a project, they may then face another major impediment—their debt ceiling. This problem is not critical if a project is one that generates revenue to pay for itself, such as a water system. Rather, debt limitations for local governments in South Carolina pertain to general obligation debt, debt that is backed by the full taxing power of the issuing locality. Projects typically funded by incurring this debt include non-revenue generators such as city halls, county courthouses, and school buildings.

The local government general obligation debt limitation in South Carolina is the same for cities, counties, and school districts. This "debt ceiling" is equivalent to 8 percent of the assessed value of the taxable property in the jurisdiction. Any general obligation debt that would exceed the 8 percent limit may be incurred only by a favorable referendum of the voters of a jurisdiction, an action that has become increasingly more difficult to achieve.

In 1989, the SCACIR issued a comprehensive report examining the issue of local government debt and state constraints. The report concluded that high growth areas—such as the state's urban and major tourism counties—found debt limits burdensome as they attempted to reinvest in community facilities to deal with their present and future growth. Most importantly, the Commission concluded that local government debt levels should be limited, but that the demand for new public facilities required that the present constitutional debt limit, and debt issues in general, be reexamined to determine their impact on infrastructure development.

Findings: Revenue Projections Related to Infrastructure Costs

Twenty-year revenue projections for the State of South Carolina indicate that to meet an average of $2.0 billion in annual capital costs, multiple sources would have to be tapped each year for twenty years. Other states have undertaken the following types of activities.

Existing Revenues

Existing sources of state and local revenue are sought to contribute about $0.55 billion annually. They earmark a share of state (10 percent) and local (14 percent) property tax and other revenues specifically for capital spending.

An annual requirement of about $0.91 billion in monies for capital expenditures often comes from federal and state intergovernmental transfers. These revenues flow to both state and local governments directly and through the state for local capital projects. A significant grantsmanship effort is also undertaken in several states. This is done to assure that monies being paid to the federal government in the form of citizens' federal income tax are returned to the state (a share for capital expenditures), at least in direct proportion to the share of all citizens' federal income taxes paid. To the degree that funds cannot be secured from these sources, infrastructure provision is accordingly delayed.

Revenue Increases

States requiring infrastructure revenues also seek to increase existing, or establish new, revenues. At the state level, a slight increase in the state sales tax, tolling interstate roads, and various forms of user charges (cultural and recreational fees) are paid by those who benefit from services related to major capital improvements. The state gasoline tax is also raised (with a direct local pass-through) to provide for expanded state and local road construction. Road costs typically represent 40 percent of all new infrastructure costs; vehicle users are asked to pay for these costs.

At the local level, local option sales taxes, impact fees, and water/sewer charges are used to raise revenues in areas where state-of-the-art capital facilities are required to benefit specific businesses. County revenues from a state gasoline tax are also a source of local money. A portion of the local property tax is usually dedicated for capital purposes to meet local capital needs and often must be increased slightly.

Activities in Other States: New Revenues for Infrastructure

Existing revenue sources (general fund, other sources, and intergovernmental transfers) together typically bring in about 75 percent of the money required to meet a state's estimated infrastructure needs. Funds in both cases are earmarked for capital purposes. This capital reservation earmarking is at a level of 10 percent for both state and local (county, municipal, and school district) revenues.

At the state level, in other states, additional resources are dedicated for capital infrastructure by:

- Increasing the state gasoline tax (a 1¢ pass-through to counties).
- Increasing the state sales tax rate by 0.5 percent.
- Implementing user fees on major state highways (25¢ on interstate roads every 40 miles in both directions).

At the county and local levels, revenue efforts often include:

- An increase in the local property assessment rate of 0.5 percent, specifically designated for capital purposes.
- Full pass-through to the county of a state gas tax increase (1¢).
- Development impact fees per new residential unit ($2,000) and per 1,000 square feet of nonresidential space ($1,000).
- Water and sewer fee increases per residential and nonresidential unit (typically 15 percent).
- Local option sales taxes expanded to all counties and cities, as opposed to existence in only some of these locations.
- Establishing tax increment financing districts in areas of significant congestion for the specific funding of capital projects.

INFRASTRUCTURE REVENUE RECEIPTS (ANNUAL)

CURRENT BUDGET DEDICATIONS	STATE ($ Billions)	LOCAL ($ Billions)	TOTAL ($ Billions)
State/Local Budgets (10% Earmarked)	0.32900	0.22100	0.54900
Intergovernmental Transfers (Federal to State; State to Local)	0.51300	0.39800	0.91100
INCREASES IN STATE AND LOCAL REVENUES			
Sales Tax (0.5% State; Expand Local Options Tax)	0.15900	0.03000	0.18900
User Charges State: Toll Road (25¢) Local Fees: Impact ($2,000 residential/ $1,000 nonresidential) Water (10%)	0.06300	0.06800	0.13200
Gasoline Tax (State: 1¢ to County)	–	0.02800	0.02800
Property Tax Assessment (0.5%)	–	0.19900	0.19900
TOTAL	1.06500	0.94500	2.01000

GOALS OF AN INFRASTRUCTURE BUSINESS PLAN

- A plan for state and regional capital improvements that can be bought into and supported statewide.
- An administrative body to implement the plan.
- An integrated system of "pay as you go" and financed revenues to pay for new and rehabilitated infrastructure statewide.

AN INFRASTRUCTURE BUSINESS PLAN

Discussion:
Components of an
Infrastructure Business Plan

The importance of both short- and long-term infrastructure planning and financing on the overall economic health of and quality of life in the state of South Carolina cannot be overemphasized. It is essential to both the fiscal integrity of the state and the character and quality of future development that a comprehensive effort be undertaken to identify and plan for the financing of future capital needs.

A business infrastructure plan involves the identification of needed improvements along with a short- and long-term plan for financing those improvements. Ideally, infrastructure planning results in a business plan that provides a framework for decision making. Such a plan would address the spectrum of land use issues, including how and where growth will occur and who will pay for the infrastructure necessary to serve new development. The plan must balance the impacts of new development against the impact of existing development.

Taken separately, programming for infrastructure and financing infrastructure are important but somewhat academic exercises. States can plan for infrastructure but if they are not able to fund it, the plans go unrealized. Viewed together, however, the two separate exercises assume new meaning. The key is the interrelationship of infrastructure facilities planning and infrastructure finance planning. By considering these two components as part of one effort, the built environment can be managed much more efficiently.

A business plan for state growth must be implemented by an office of government. This office must be located in a governmental unit that has knowledge about government spending and is instrumental in setting statewide fiscal policy. The plan must include provision for such an office.

Activities of Other States:
Business Plans for
Infrastructure Assessment

Infrastructure is the skeleton of top of which the built environment grows. It is important that the community know what this framework looks like currently and understand how it is to develop. In an era of government fiscal accountability, communities must operate efficiently, much like a CEOs run businesses. A business surely would have a capital planning component in its strategic plan. Current equipment would be well documented, as would future plans for expansion. The business plan would include replacement equipment as well as new equipment to allow for expansion. Financing provisions for the replacement and acquisition of new equipment would not be left to chance; a well-run business would have a plan in place for careful allocation of its capital. Long-range infrastructure planning in the public context, like long-range capital planning in the business context, is a process that requires informed and cost-effective decision making.

A careful assessment of current and future infrastructure needs allows a state to respond in terms of financial resources and directions for growth. By segmenting infrastructure needs into three general tiers—current, near-term, and long-range—priorities begin to take shape. Admittedly, the more distant the forecast, the less reliable it is likely to be. Nevertheless, for planning purposes, such projections provide, at the very least, a reference point, for various development and funding scenarios. The critical point is that if annual decisions are made without a long-range plan, money inevitably will be diverted to the issue or crisis of the moment. Long-range infrastructure planning and budgeting can help avoid these crises.

The advantages of a business infrastructure plan:

- First, it creates a more predictable environment for public and private investment and avoids unrealistic expectations about the timing of development and level of service for needed facilities. If the private sector understands when facilities will be available to serve a particular area, the risk inherent in private-sector investment decisions in those areas and disappointments can be reduced if not avoided.
- Second, an infrastructure business plan ensures discipline in public-sector decisions. Each year, elected officials are challenged to allocate scarce financial resources to competing interests. In the absence of such a plan, there is a natural tendency to make budget decisions on the basis of political pressures of the moment, with the result that less pressing but equally important improvements are overlooked.
- Third, infrastructure is provided to existing and planned future development in a manner that makes sense not only from a planning perspective but from a fiscal perspective as well. Too often, communities allow additional development to occur and build public facilities afterwards.

Activities of Other States: An Administrative Structure

No business plan can be implemented nor can meaningful priorities be set or regional service economies ensue without an appropriate administrative body to make decisions that will benefit all. A central capital planning office is often established within the treasury department or budget office of the state. This department serves as a central authority and coordinating body and is responsible for establishing an infrastructure prioritizing process.

The central capital planning office acts in an advisory role to assist local and regional planning agencies. It typically has its own executive director who reports to a financial head within the executive branch of government.

The central capital planning office relies on growth projections provided by the data centers of the various states and is responsible for preparing and updating regular infrastructure needs assessments. It also is responsible for projecting revenue returns related to current and future growth, and coordinating these projections with

projections of future infrastructure costs. This office then recommends how existing revenues are to be tapped and new revenues brought on line to help close any shortfalls between infrastructure costs and infrastructure revenues. The central capital planning office is further responsible for determining where revenues are raised, that is, at the state or local level, and recommending a menu of revenue alternatives at each level, with appropriate projections to achieve the intended funding requirements.

The central capital planning office is also responsible for pursuing studies that recommend specific ways to eliminate duplication and fragmentation among existing state and local agencies. It further makes recommendations for changes in legislation and regulations to make the state's overall infrastructure delivery process more coordinated and effective.

Activities of Other States: Integrated Systems of Revenues

Once an infrastructure plan has been developed and an administrative body established to prioritize and recommend infrastructure projects, serious "number pushing" ensues to design an array of revenues appropriate to the infrastructure support task. While it is the central capital planning office's responsibility to recommend revenue alternatives, often studies are "contracted out" to local universities and consultants to determine who should pay (existing or future residents) and via what means (taxes, user charges, and the like).

The advantages of an infrastructure financing program are evident in an era of careful fiscal responsibility. First, decisions regarding incurring debt require a long-range perspective because of the length of repayment periods. What may seem like a beneficial decision to meet an immediate need may not be justifiable in the face of a long-squeeze on capital.

Second, experience shows that community support for revenue increases is linked directly to perceived confidence about the benefits that will be forthcoming. The more clearly the benefits of a proposed program of public investment are communicated to the public, the more likely the public will support their funding. In addition, an established schedule of improvements makes it easier for residents in one region to understand that while monies are being committed today in other parts of the state, their area will be in line for future funding.

Finally, looking at the entirety of what has to be done tends to be much more resource-efficient than approaching development incrementally.

Activities of Other States: Balancing Efficiency and Equity

The central capital planning office often has to decide *where* infrastructure will be developed. These decisions benefit from the advisory support of an independent advisory committee to the central capital planning office. The advisory committee, which often comprises regional representatives, allows consensus building between statewide and regional assessments of infrastructure need. The purpose of the advisory

committee is solely to advise; the central capital planning office's decisions are not overruled by the advisory committee.

In pursuit of its charge, the central capital planning office comes to grips with which areas will or will not receive certain types of infrastructure. These decisions are based on both *statewide* priorities and overall efficiency (say, 75 percent) yet must not ignore local needs that may occasionally conflict with statewide efficiency.

The equity of allowing infrastructure to be placed in certain areas that need economic sustenance also enters into the equation (perhaps 25 percent). On the one hand, counties that require occasional "jump starting" have to receive their share of attention, even though this might appear to detract from overall efficiency. In the final analysis, the central capital planning office has been charged with putting infrastructure in areas where it will do the most good for the citizens of the state as a whole.

EDUCATION NEEDS AND THE EDUCATION PROCESS

- Involve as many as possible.
- Communicate the benefits of infrastructure provision.
- Use the media, a speakers bureau, business leaders, and regular symposia to get the message out.

THE NEED FOR EDUCATION

Discussion:
Why the Need for Education As It Relates to Infrastructure Provision?

At the heart of the challenge of infrastructure finance is a lack of general understanding regarding the relationship between the availability of infrastructure and the level of a community's quality of life and practically *no* understanding of the cost of infrastructure and the sources of revenue on which infrastructure depends. A key element of a successful infrastructure finance program is educating the public and its appointed, employed, and elected officials about the nature of infrastructure and the cost of maintaining and improving it.

Unfortunately, infrastructure is not a particularly exciting subject to the average citizen. Except for those occasions when the sewer backs up or when water pressure drops, infrastructure is one of those topics which "someone else" should pay attention to. As a result, it is unlikely that the medium of the moment—the TV sound bite—will play a significant role in a successful education program. Other media, such as brochures and pamphlets, are more likely to be the foundation of a successful infrastructure education program.

It is often the responsibility of the central capital planning office to initiate the educational program. The central capital planning office understands what the needs are and how best to approach the program.

First and foremost, the general public must be educated if it is expected to support significant infrastructure initiatives. Historically, infrastructure finance initiatives around the country do not succeed unless the public understands the nature of capital facilities' supply and demand relationship. It is easy to blame growth for traffic congestion, for example; however, as discussed above, traffic congestion is the result of a whole host of forces, including increased travel by existing residents. The problem is that the general public has little interest in infrastructure matters except when fees or taxes are increased or when the level of service declines to a point that is unacceptable. At that point, the public is not receptive to being educated.

What is needed is a deliberate program of educational building blocks. These begin with simple concepts—for example, waste stream separation as a way of improving the cost effectiveness of solid waste disposal. From there, one can move to the more complex interrelationships that characterize traffic congestion. It takes time and deliberation to debunk the myths of infrastructure, and it requires that school-age children, their parents, and *all* segments of the community be exposed to the basic concepts that underlie the infrastructure equation.

Activities of Other States: The Use of Pamphlets, Papers, and Other Informational Materials To Get the Word Out

To the extent that local media—print or television—can be induced to address the infrastructure issue, a newspaper series on infrastructure and quality of life has proven to be very effective, as are local documentaries that compare qualities of life in communities with effective infrastructure planning and finance programs and those that lack such programs.

The education of the general public is also the first step in the education of its elected officials. Experience shows that it takes more than an enlightened public to achieve infrastructure finance objectives. Elected and appointed officials also need to be educated so that they can disregard the "heat" generated by infrastructure and land use debates and focus on the difficult choices that confront them. Brochures, pamphlets, and guides to infrastructure needs and finance are all useful tools for educating elected officials about the direct and indirect effects of public policy decision making. Symposia are another effective means of educating elected and appointed officials. These officials find comfort in hearing about the experience of others with similar obligations and responsibilities, and symposia are a meaningful opportunity for that kind of exchange. Moreover, symposia present a non-adversarial venue for elected and appointed officials to interact with their staff and constituents outside the context of a particular issue.

Activities of Other States: Establishing Speakers Bureaus

Effective educational programs often comprise "speakers bureaus," which maintain rosters of available experts. A group that has heard about a particular infrastructure issue secures a knowledgeable speaker from the bureau to participate in a regular or special hearing. There are numerous examples around the country of speakers bureaus that played important parts in successful programs of community awareness. The speakers are often supported with materials for distribution and with illustrative graphics (in various media) to respond to different questions in various settings.

Activities of Other States: Creating a Business Leaders Program

One of the shortcomings of the local government public hearing process is that it tends to be driven by people who have a narrow special interest in a particular topic being considered. One way of educating the general public and its elected representatives is an active program of public participation by business and other leaders to ensure that a more comprehensive perspective is presented during public hearings.

Forums where representatives from business, conservation, and other fields come together to ensure that consideration of current, near-term, mid-term and long-term infrastructure needs are not lost in the passions of the moment of a particular issue have had a dramatic impact on the infrastructure debate. The participation of business leaders in public discussions on infrastructure often shift the paradigm

from benign neglect to deliberate consideration. In the traditional model, the real estate development industry—which has a clear self-interest in the subject—has been the principal advocate for infrastructure changes, even though the entire business community is highly dependent on adequate public facilities. An initiative which makes clear to the general public and appointed and elected officials that the adequacy of public facilities is an important issue to the entire community is significant initial step in reforming the process of infrastructure provision.

Activities of Other States: Holding Regular Symposia

Other states have wrestled with the very same infrastructure issues that confront South Carolina. One way to learn from mistakes and to create positive momentum is to convene one or more symposia where experienced individuals come to the region and share their views with the community. Symposia serve not only as educational opportunities but also as motivational experiences. Learning that Oregon, for example, has found a way to meet its long-term capital facilities needs provides comfort and cover for those in the state who are willing to engage in change. Most people, for example, believe that infrastructure referenda, like other referenda involving increased taxes, are not very successful. The fact is that most infrastructure referenda are successful—provided that certain key program elements are present. Bringing the people who have succeeded in establishing infrastructure as a prime consideration in their home territory offers an opportunity for the region to learn from others and to avoid repeating mistakes.

Activities of Other States: Preparing the Infrastructure Education Message

1. Informing people of infrastructure and infrastructure needs.
   States are:
   - exposing them to the relationship between infrastructure and quality of life.
   - making them aware of the enormity of, and reasons for, infrastructure need.
   - explaining the typical infrastructure revenue shortfall.
   - providing access to meaningful information about infrastructure via the Internet.
2. The alternatives available.
   States are:
   - becoming more efficient in the provision of infrastructure;
   - devoting more resources to infrastructure provision;
   - deferring needed infrastructure investment;
   - combining of the above; or
   - doing nothing and deferring the problem.
3. Indicating that decisions will be difficult, but necessary.
   States are:
   - describing the new infrastructure initiative.
   - explaining how the state will benefit from it.

AN INFRASTRUCTURE BUSINESS PLAN: MAKING THE PLAN WORK

- Having and implementing an action plan.
- Establishing milestones within the plan.

AN INFRASTRUCTURE BUSINESS PLAN

Discussion:
How to Get A Business Plan Going

Unfortunately, most plans—comprehensive plans, special area plans, and even business plans—are often relegated to a shelf in a closet in some staff office. To be blunt: "a plan without implementation is no plan at all." In order to implement the objectives of this report, it is necessary to establish a series of strategic action plans:

- a short-term plan for year one;
- a mid-term plan for years two and three; and
- a long-term plan for years four and five.

Activities of Other States:
Preparing Short-term Plans

Three general initiatives are often undertaken as a part of a short-term plan: (1) establish a central capital planning office; (2) initiate a comprehensive public education program; and (3) analyze alternative funding mechanisms.

1. The Central Capital Planning Office

A central capital planning office is often established within the executive branch of government in one of the financial departments. The duties and staffing levels of this office are specified and appropriate legislation drafted for its creation. A central capital planning office often operates in parallel to a government advisory agency. In South Carolina, this would be the Advisory Commission on Intergovernmental Relations. The purposes of these two agencies are frequently sufficiently similar—the delivery of government and its services in the most efficient ways—that they could easily operate as one or as partners. This is usually a critical move in the overall process of delivering capital goods more effectively.

2. An Education Program

Soon after the establishment of a central capital planning office, this office—together with other interested and affected groups—typically commences a six-month public education program on a topic such as the relationship between infrastructure and quality of life. The public education effort is often comprised of four elements:

1. pamphlets, papers and other informational materials
2. a speakers bureau
3. a business leaders program
4. one or more symposia on infrastructure and quality of life

2a. Pamphlets, Papers and Other Informational Materials

The first medium of communication is written material that sets out the essential elements of the infrastructure equation. The material, often distributed by the central capital planning office, is presented in an easily understandable format and typically includes a contact for additional information. These materials take any of several different forms, from pocket size, to foldouts, to 8 1/2 x 11 brochures. The materials are published in quantity and made readily available throughout the region. They are prepared and disseminated over

time with each document presenting a simple proposition, like "The Truth About Traffic" or "There's No Free Lunch." Other entities, including local governments, are encouraged to co-sponsor the distribution of materials with the central capital planning office. School sites are sought as places of dissemination, as a means of reaching families who are not normally involved in land use and infrastructure debates.

2b. Speakers Bureau

Speakers bureaus with participants from diverse fields throughout states are also often established. Speakers are supported with written speeches (in full text and outline form), informational materials, and presentation graphics. The availability of speakers is advertised with direct mailings and public information announcements in the local media.

2c. Business Leaders Program

An infrastructure "strike team" of business leaders is also often established to provide speakers at public meetings, where matters that directly or indirectly affect infrastructure or infrastructure finance are discussed. These participants typically focus on the "big picture" and concentrate on the implications of the proposed action on long-term capital needs. These participants usually represent a broad spectrum of economic development interests and tend to elevate the discussion above the immediate concerns of special interests to ensure that all perspectives—individual and cumulative—are fairly presented.

2d. Symposia

Symposia are held during the first year after recognition of the infrastructure report. Symposia are held in central locations with sufficient seating to accommodate significant numbers of people. Symposia focus on the relationship between infrastructure and quality of life and on infrastructure need and financing. Symposia are often noticed through invitation lists; however, invitations are usually extended to diverse groups of public- and private-sector interests. Symposia often feature nationally recognized keynote speakers and emphasize on practice as opposed to theory. In other words, the symposia faculty often comprise practitioners rather than academics.

3. Alternative Funding and Management Mechanisms Analysis Initiative

Many of the alternative funding and management mechanisms that are appropriate for implementation require further legal and administrative review. For example, the question of whether an optional hotel/motel tax is a sales tax or a privilege tax defines the utility of this funding alternative as a regional infrastructure funding device. It often matters not how the issue is resolved—by legal opinion, a request for an attorney general's opinion, or some other means—only that is resolved before the mid-term action plan is implemented.

MILESTONES (Typical Activities):

Year 1 (first six months)
- Creating the central capital planning office
- Publishing two infrastructure educational documents
- Conducting a symposium on the relationship between infrastructure and quality of life
- Establishing a speakers bureau
- Forming an infrastructure support "strike force" of business leaders

Year 1 (second six months)
- Publishing two infrastructure educational documents
- Conducting a symposium on alternative methods of financing and managing infrastructure

Activities of Other States: Preparing Mid-term Plans

The mid-term plan frequently represents the transition from education and analysis to implementation. This is the time to establish credibility and create momentum. To this end, initial implementation programs are selected to avoid unnecessary risk; they also are chosen because of their visibility. A frequent alternative that emerges from initial analyses is the consolidation of water and sewer facilities in a region; if no opposition arises, it is often moved forward.

The mid-term plan typically involves the implementation of at least one major program each year during the second and third years after acceptance of the infrastructure report. The programs selected for implementation, to the greatest extent practical, avoid highly controversial issues and focus on programs that both improve efficiency and address politically popular subjects.

MILESTONES (Typical Activities):

Year 2
- Preparing and executing a regional intergovernmental agreement with regard to infrastructure delivery or management

Year 3
- Completing a public–private partnership in infrastructure finance

Activities of Other States: Preparing Long-term Plans

The long-term action plan is often predicated on the research and education of the short-term action plan, the credibility and momentum established under the mid-term action plan, and is a point of major risk-taking. It is at this juncture that major initiatives involving complex and controversial initiatives are addressed, including a statewide infrastructure prioritization initiative together with a statewide transportation infrastructure finance element, such as a statewide gas tax increase or a significant user charge for regular transportation facilities usage.

MILESTONES (Typical Activities):

Year 4
- Implementing a new statewide infrastructure finance or management program

Year 5

- Implementing an additional statewide infrastructure finance or management program

CONCLUSION

Infrastructure is an important and difficult issue to deal with at the state level. The need is large, and invariably revenues must be tapped that cut to the quick in terms of local finance options. The reality, however, is that without infrastructure development it is difficult to move forward and accept future growth. Systems become overburdened and break down, and the state is rendered to a point of disadvantage from which it cannot return.

States have come to grips with this reality by either slowing the pace of growth so that capital facilities are available and in place (concurrency) or funding capital facilities at a pace equal to projected growth (capital facilities provision). Whichever course of direction is chosen, one that *cannot* be followed is to allow the pace of growth to continue but provide little in additional capital facilities.